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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,346	07/20/2005	Toshitsugu Kiyosada	1852-044862	5911

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EXAMINER	
BERNSHTEYN, MICHAEL	
ART UNIT	**PAPER NUMBER**
1713	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/505,346	KIYOSADA ET AL.	
	Examiner	Art Unit	
	Michael Bernshteyn	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-37* is/are pending in the application.

4a) Of the above claim(s) *12-15,18-22,24,26 and 28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16,17,23,25,27 and 29-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *12-37* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action follows a response filed on December 6, 2006. No claims have been amended, added or cancelled.

2. Applicant's arguments, see Remarks (pages 5-9), filed December 6, 2006, with respect to claims 16, 17, 23, 25, 27 and 29-37 have been fully considered and are persuasive. The rejection of claims 16, 17, 23, 25, 27 and 29-37 has been withdrawn.

3. Claims 16, 17, 23, 25, 27 and 29-37 are active.

Claim Rejections - 35 USC § 103

4. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.

5. Claims 16, 17, 27, 29-31, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguni et al. (U.S. Patent 5,698,627) in view of Bergthaller et al. (U. S. Patent 4,334,013).

Oguni discloses a novel additive for papermaking. The additive comprises an aqueous solution of a copolymer obtained by reacting (a) an acrylamide, (b) a vinyl monomer which is copolymerizable with component (a) and has a cationic group, (c) at least one of vinyl monomers which are copolymerizable with component (a) and (b) and have 2, 3 or 4 carboxyl groups in a molecule thereof and/or a salt thereof, optionally (e) a nonionic monomer which is copolymerizable with components (a), (b) and (c) if desired, and (d) a cross-linking compound, in the presence of (f) at least one of ethylene glycol, diethylene glycol, diethanolamine and glycerin. This novel additive for

papermaking is able to achieve excellent freeness and retention in the process of papermaking and provides paper with increased strength (abstract).

With regards to the limitations of claims 16 and 17, Oguni discloses that the above-mentioned (a) acrylamide includes acrylamide, (meth) acrylamide as well as N-substituted acrylamides such as N-methyl (meth)acrylamide, N-ethyl (meth)acrylamide, N,N-dimethyl (meth)acrylamide, N-iso-propyl(meth)acrylamide, N-t-octyl (meth) acrylamide, etc. One of them can be used alone or two or more of them can be used in combination (col. 2, lines 39-45). These monomers correspond to monomer (b) of the claims 16 and 17.

The above-mentioned (b) vinyl monomer includes vinyl monomers containing tertiary, secondary or primary amino group such as allylamine etc. or their salts of inorganic or organic acid such as hydrochloric acid, sulfuric acid, formic acid, acetic acid, etc. (col. 2, lines 53-55), which is corresponding to monomer (a).

Typical examples of the above-mentioned (c) vinyl monomer which is copolymerizable with components (a) and (b) include divalent unsaturated carboxylic acid such as maleic acid, fumaric acid, itaconic acid, muconic acid, citraconic acid, etc., and their salts of an alkali metal such as sodium, potassium, etc. and ammonium salt; allylsulfonic acid, 2-acrylamide-2-methylpropanesulfonic acid, etc. (col. 3, lines 8-30), which is corresponding to monomer (c1).

All of the above monomers can be used alone or two or more in combination (col. 3, lines 5-7, 18-20, 28-30), which is corresponding to monomer (c2).

As the above-mentioned (d) cross-linking compounds, di(meth)acrylates such as ethyleneglycol di(meth)acrylate, diethyleneglycol di(meth)acrylate, triethyleneglycol di(meth)acrylate, propyleneglycol di(meth)acrylate, etc. can be used (col. 3, lines 32-62).

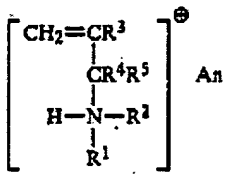
Oguni discloses that the above-mentioned (b) vinyl monomer includes vinyl monomers containing tertiary, secondary or primary amino group such as **allylamine** etc. or their salts of inorganic or organic acid such as hydrochloric acid, sulfuric acid, formic acid, acetic acid, etc. (col. 2, lines 53-55).

Oguni does not disclose the monomers, which are corresponding to monomer (a).

With regard to the limitations of instant claims 16 and 17, Bergthaller discloses copolymers obtained by polymerizing an allyl ammonium salt, a monomer containing at least one anionic group and acrylamide and/or methacrylamide are useful as peptizing agents for silver halide emulsions (abstract).

With regard to the limitations of instant claims 16 and 17, Bergthaller discloses that the invention provides: (1) new copolymers characterised by a content of a copolymers of **at least** the following **polymerized compounds**:

(1) an allyl ammonium salt corresponding to the following formula



(A)

which is analogous to formula (1) of the claim 16. A_n is an anion, particularly the **anion of a strong inorganic or organic acid, particularly chloride**; alkane sulphonate; aryl sulphonate; trifluoroacetate; perfluoroalkanoate; perfluoroalkane sulphonate or the sulphonate group of a monomer present in copolymerised or copolymerisable form (col. 2, line 34 through col. 4, line 41).

Both references are analogous art because they are from the same field of endeavor concerning new copolymers obtained by polymerizing an allyl ammonium salts, a monomer containing at least one ionic monomer, acrylamide and allyl sulfonic acid (salt).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an allyl ammonium salt corresponding to formula (1) as taught by Bergthaller in Oguna papermaking composition with reasonable expectation of success because such compound contains an ionic group and can be easily copolymerized with an acrylamide (US'627, col. 2, limes 23-24]), and thus to arrive at the subject matter of instant claims 16 and 17.

With regards to the limitations of claim 27, Oguni discloses that because of the introduction of cross-linking structure by the cross-linking compound (d), the molecule expands and thus the number of contact points with fibers increases. Therefore, freeness, retention and paper-strengthening effect are enhanced (col. 4, lines 54-58).

With regards to the limitations of claims 29-31, 34 and 35, Oguni discloses that preparation of acrylamide copolymers can be carried out by any known conventional process. For instance, it is carried out as follows. Components (a), (b), (c), (d), (e) if

used, and (f) are placed together with water in any reaction vessel in amounts that the monomer concentration be 2-40 wt %, preferably 5-30 wt % and a radical polymerization initiator is added. If required, a known chain transfer agent such as alkylmercaptans, thioglycollic acids or esters thereof, isopropyl alcohol, allyl alcohol, etc. can be suitably added. The reaction mixture is heated under stirring. Thus the desired acrylamide copolymers can be obtained. Needless to say, each component of (a), (b), (c), (d), (e) if used, and (f) can be added suitably by continuous dropping or any procedure in accordance with the characteristics of each component (col. 5, lines 40-54). It is desirable that the viscosity of the resulting acrylamide copolymer is not higher than 15000 cps at 25^0C when measured with a Brookfield rotation viscosimeter (col. 6, lines 11-14).

6. Claims 23, 25, 32, 33, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Oguni and Bergthaller as applied to claims 16, 17, 27, 29-31, 34 and 35 above, and further in view of Nasu (U. S. Patent 5,756,646).

The disclosure of Oguni's and Bergthaller's references resided in § 5 is incorporated herein by reference.

With regard to the limitations of instant claims 23, 25, 32, 33, 36 and 37, the combined teaching of Oguni and Bergthaller does not disclose that the polymerization is conducted in the presence of a urea compound.

Nasu discloses an agent for improving surface quality of paper comprising an acrylamide resin composition obtained by hydrolyzing an acrylamide resin, which is obtained by **polymerizing an acrylamide monomer in the presence of a urea**

compound (abstract). The urea compounds include urea, thiourea, ethylene urea, ethylene thiourea, etc. One or more of these can be used in combination. It is especially economically preferable to use urea alone (col. 3, lines 16-19).

Therefore, it would have been obvious to one having ordinary skill in the art then the invention was made to add urea compound as taught by Nasu during the polymerization process of acrylamide polymer composition of Oguni and Bergthaller to achieve excellent effect for improving surface strength, tensile strength and internal strength of paper (US'646, col. 2, lines 37-39), and thus to arrive at the subject matter of claims 23, 25, 32, 33, 36 and 37.

Thus, the combination of Oguni, Bergthaller and Nasu renders all instant claims *prima facie* obvious in absent of unexpected results commensurate in scope of the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
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Art Unit 1713

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03/09/2007

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